

**Summary of the TEC Working Group Rail Topic Group report entitled  
“Transportation Safety WIPP-PIG Rail Comparison”**

In 1999, the Transportation External Coordination (TEC) Working Group developed a report entitled the “TEC/WG Transportation Safety Rail Comparison” to provide summary information to TEC participants concerning operational approaches, for rail transport in addressing a variety of transportation issues, objectives, approaches and procedures arising from the shipment of Department of Energy (DOE)-owned radioactive materials. This document resulted from numerous conference calls and face-to-face meetings involving participants in the group representing the rail industry, the regulatory community, federal managers, research groups, and state and local officials. The report can be found at: <http://twilight.saic.com/newtec/rail.html>. The report examined current rail industry approaches for each issue area within the Waste Isolation Pilot (WIPP) Transportation Safety Program Implementation Guide (WIPP-PIG). The WIPP-PIG was developed by the Western Governors’ Association (WGA) Technical Advisory Group for WIPP Transport, in cooperation with the U.S. Department of Energy (DOE).

The report had three key findings pointing out some fundamental differences between highway and rail transport:

- The unique (i.e., closed) nature of the rail system magnifies the effects of incidents (those requiring diversion from or closing of a rail line) by impeding the normal flow of rail traffic throughout much of the rail system.
- These magnified effects on rail operations provide financial and other incentives for the rail industry to employ innovative technical and policy measures aimed at enhancing safety through highly trained and prepared personnel and equipment maintained at a high level of service worthiness; and
- The Federal Railroad Administration (FRA) and regulations that fall under its jurisdiction which pertain to the training and preparedness of rail crews serve a stewardship role, providing baseline guidance and oversight while not impeding industry safety standards and practices.

The report also summarized the basic elements of currently existing guidelines and procedures in place for the rail mode of transport related to the important transportation issues outlined in the WIPP-PIG. Listed below are the 12 WIPP-PIG Issues listed in this document.

**“High-Quality” Crews and Carrier Compliance:**

**WIPP-PIG:** Highly qualified, well trained drivers; diligent vehicle maintenance; carrier compliance with regulations; and enhanced carrier and driver performance requirements can greatly reduce the risk and consequences of truck incidents.

**Rail Mode:** The FRA requires recurrent and function-specific training for personnel performing specific work; these regulations, although highly detailed, are meant to serve as a baseline set of requirements for the industry, and carriers often institute measures to exceed those requirements. Regulatory compliance on the part of rail carriers in the area of rail safety (including crew training and preparedness and equipment inspection) is assured by rail industry rules, standards,

and recommended practices which correspond with and in some cases enhance said regulations. Additionally, safety and performance provisions are standard features of DOE contract carrier agreements, and provide another measure of assurance that regulatory requirements are met.

### **Independent Inspections:**

**WIPP-PIG:** A quality inspection program assures that drivers and vehicles perform at optimum levels and that radiation levels remain within allowable limits.

**Rail Mode:** Inspection and enforcement activities for radioactive material transportation by rail are generally conducted jointly by the FRA and state agencies through the FRA State Participation Program. Current regulations require that inspections be conducted on all rail equipment prior to departure from the point of origin and at distances of no more than 1,000 miles. En-route inspections of mechanical equipment are generally conducted at routine stopping points. Carriers frequently adopt extra-regulatory procedures voluntarily. The experience of the FRA and most major rail carriers demonstrates that states and other non-federal entities have sought and will continue to seek a significant role in the inspection of trains carrying radioactive cargo, for a variety of reasons.

### **Inclement Weather and Track Conditions:**

**WIPP-PIG:** Bad weather and road conditions create hazardous travel conditions.

**Rail Mode:** Title 49 of the Code of Federal Regulations covers a wide range of issues relevant to inclement weather and track conditions such as, standards for track and signal inspection, inspection of grade crossings, and implementation of warning devices at grade crossings. In addition to these issues, industry rules and standards provide for bridge and track inspection and the promulgation of "bad weather policies" by rail carriers. Rail carriers also use train control and monitoring systems to identify the location of their trains within the rail system, and make informed decisions based on this information in order to avoid or minimize potential weather-related risks.

### **Safe Haven During Abnormal Conditions:**

**WIPP-PIG:** Shipments may be delayed en route due to mechanical problems, bad weather or hazardous road conditions or other unanticipated problems.

**Rail Mode:** All major rail carriers produce and revise their own series of contingency plans which cover all freight, including radioactive materials. These contingency plans span a wide range of possible hazards and problems threatening the continued safe operations of each particular carrier. Examples of hazards accounted for include derailments, track damage, and the like, and function much the way a decision tree does, in presenting a series of steps that take into account the nature and location of the problem at hand.

**Advance Notice of Shipments/Shipment Status Information:**

**WIPP-PIG:** States need annual shipment schedules, advance notice of shipment dates, information on the status of shipments en route, and the ability to communicate directly or indirectly with the drivers.

**Rail Mode:** The standard notification procedure and tracking capabilities used for other modes of transporting radioactive materials retain their utility for the rail mode. Title 10 of the Code of Federal Regulations, 10 CFR Part 71.97, and Part 73.37 of Title 10 include proper notification procedures and safeguards requirements. In most situations, the rail dispatch center usually serves as the single best resource for information about the location of any given train at any given time.

**Medical Preparedness:**

**WIPP-PIG:** Effective medical response to a WIPP transportation incident requires a clear understanding of radiological response plans and procedures by emergency medical personnel in the field and at hospitals, adequate training, and the necessary supplies and equipment.

**Rail Mode:** Medical personnel along rail transportation corridors, as is the case with other modes of transport, are an integral component of any comprehensive emergency response system. Important components in maintaining such a system include: assessments of hospital readiness; development and refinement of radiological response plans and procedures; training, drills and exercises; and the identification and purchase of appropriate radiological and non-radiological supplies and equipment. Affected states along major rail corridors should develop working relationships with potentially affected medical facilities and personnel to ensure the development of adequate, up-to-date radiological response plans and procedures.

**Mutual Aid Agreements:**

**WIPP-PIG:** WIPP transport incidents may occur near state borders or exceed state and local emergency response capabilities. State and local officials must be able to access the closest emergency response resources, whether they are in an adjoining state or part of a federal agency.

**Rail Mode:** The term “mutual aid agreement” refers specifically to agreements developed between governmental entities, not between governmental and private entities such as rail carriers. The rail industry does encourage the use of mutual aid agreements as a tool for dealing with radioactive materials incidents that occur along the border of two or more states, or in cases where a particular state or local jurisdiction may be lacking the resources necessary to respond to an incident. Rail carriers continually develop and revise their contingency plans for dealing with all hazardous materials incidents.

**Emergency Response Plans & Procedures:**

**WIPP-PIG:** Emergency response plans and procedures help ensure coordinated, timely, and effective incident response.

**Rail Mode:** In the case of planning for rail emergencies, the rail carriers themselves commit much of the needed resources for developing, testing, and implementing response plans. National planning and coordination for emergency response is accomplished through the National Response Team (NRT). The NRT provides policy and program direction to the Regional Response Team (RRT). The Federal Emergency Management Agency (FEMA) provides guidance, policy and program advice, and technical assistance in hazardous materials, chemical, and radiological emergency preparedness activities. Where appropriate, when a discharge or release involves radioactive materials, the lead or support federal agency shall act consistent with the notification and assistance procedures described in the appropriate Federal Radiological Plan.

### **Emergency Response Equipment:**

**WIPP-PIG:** Emergency responders need specialized equipment to respond to a WIPP shipment incident.

**Rail Mode:** Personal safety equipment normally used includes radiation detection and personal protective equipment (PPE) that is up-to-date, well maintained, and regularly inspected and repaired, as necessary. First responders normally use self-contained breathing apparatus that most fire departments own. Secondary responders would require PPE such as Tyvek suits, respirators, radiation detection equipment, and other instrumentation necessary to complete area radiation and contamination surveys and cleanup.

### **Training and Exercises:**

**WIPP-PIG:** An incident involving a WIPP shipment poses unique problems for emergency response personnel not usually addressed as part of their hazardous materials training.

**Rail Mode:** Rail shippers of radioactive materials conduct periodic exercises or drills with potentially involved State, local, and Tribal officials, scheduled on an ad-hoc basis; these exercises may involve rail carrier personnel if necessary. The Department of Energy has training resources available.

### **Public Information and Participation:**

**WIPP-PIG:** The public and news media have a heightened concern about the transport of radioactive materials.

**Rail Mode:** Typically, major rail carriers centralize their communications efforts through the development of communication plans, which are then carried out both on a regional basis and on a freight-specific basis. In the event that multiple carriers handle one shipment, inter-carrier agreements usually exist which take into account the degree of security required by the shipper and the sensitivity of transferring proprietary information about the shipment between carriers.

**Rail “Routing” of Radioactive Materials Shipments:**

**WIPP-PIG:** There are various route options for moving transuranic waste from and between generators, storage sites, and the WIPP facility.

**Rail Mode:** Over the years, it has been suggested that DOT promulgate rail routing guidelines similar to the highway regulations in HM-164 to eliminate or reduce rail shipments of radioactive materials through highly populated areas. DOT has not promulgated rail routing guidelines, and the railroad industry is strongly opposed to new routing regulations. There are few realistic alternatives to shipping through major urban areas because the highest quality tracks and signal systems, and key carrier interchange points exist in major urban areas. Railroad carriers generally route hazardous cargo along what are commonly referred to as “Key Routes.”